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(54) **ORGANIC THIN FILM TRANSISTORS AND METHODS FOR THEIR MANUFACTURING AND USE**

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ABSTRACT

Methods of forming an organic thin film transistor are provided. The methods include providing a substrate and depositing and patterning a gate electrode on a first surface of the substrate. The methods include dispensing a first droplet of an insulating material on the gate electrode on the substrate and dispensing a second droplet of a semiconductor material on a first surface of the first droplet. The second droplet forms a hydrophobic structure having a central cavity. The methods also include dispensing a third droplet of a conductor material on a first surface of the second droplet such that the conductor material substantially fills the central cavity of the hydrophobic structure and forms a conductor material layer around the central cavity to define a source electrode and a drain electrode of the organic thin film transistor.

25 Claims, 5 Drawing Sheets

